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DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: Hukill Chemical Corporation
Facility Address: 7013 Krick Road, Bedford, Ohio 44146
Facility EPA ID #: OHD 001926740

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

☒ If yes - check here and continue with #2 below.

☐ If no - re-evaluate existing data, or

☐ if data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be "contaminated" above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	<u>✓</u>	<u> </u>	<u> </u>	<u>Methylene Chloride and other VOC's</u>
Air (indoors) ²	<u> </u>	<u>✓</u>	<u> </u>	<u> </u>
Surface Soil (e.g., <2 ft)	<u>✓</u>	<u> </u>	<u> </u>	<u>VOC's</u>
Surface Water	<u> </u>	<u>✓</u>	<u> </u>	<u> </u>
Sediment	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Subsurf. Soil (e.g., >2 ft)	<u>✓</u>	<u> </u>	<u> </u>	<u>VOC's</u>
Air (outdoors)	<u> </u>	<u>✓</u>	<u> </u>	<u> </u>

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

✓ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s): Eight Solid Waste Management Units (SWMUs) were identified in the *Site Investigation Report, April 1987* and it's revisions submitted by Eder Associates Consulting Engineers, P.C. in the behalf of Hukill Chemical Corporation.

The identified SWMUs were:

- API Tank Basin
- "Chem-pack" fill area
- Northwest fill area
- Neutralization Pits
- No Free Liquid Container Storage Area
- Stormwater Collection System
- Underground Cistern
- Solvent Tank Farm

The API Tank, located east of the solvent tank farm was an underground 10000 gallon API separator tank. In August of 1988, the API Tank was removed from service and the tank excavation was backfilled.

The Northwest Fill Area was comprised of debris, rubble, foundry sand and slag containing iron, zinc, lead, manganese, copper, and nickel, used to grade this area during the 1930's thru 1950's. No volatile organic compounds (VOCs) or polynuclear aromatics (PNAs) were detected above background. EP Toxicity analysis on soil borings from this area found the material not to be characteristic for EP Toxicity.

The "Chem-pack" fill area consisted of solidified pickle liquor which was used to grade the areas north of the solvent tank farm. The "Chem-Pack" material was considered non-hazardous solid waste fill. The primary constituents associated with the "Chem-Pack" material are iron, manganese, chromium, zinc, and copper. EP Toxicity analysis on the "Chem-Pak" material collected, found the leachability of metals from this material to be very low, and found not to be characteristic for EP Toxicity.

The Neutralization Pits were unlined earthen beds, where limestone was used to neutralize off-spec acids. These

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pits were abandoned in 1976, at which time they were filled to grade. Total metals analysis of soil borings from the neutralization pits found elevated levels of copper and iron. Lead was found above background levels (159 mg/kg), but below Ohio's proposed Generic Cleanup Level of 245 mg/kg. Concentration of other metals were similar to those found in background soil samples.

No further Corrective Actions are needed for the API tank basin, northwest fill area, "Chem-Pak area, and the neutralization pits as agreed to by U.S. EPA in a meeting that was held on November 7, 1989 and documented in a response letter from U.S.EPA , dated December 8, 1989.

The "No Free Liquid Container Storage Area" located on the east side of the facility, consisted of a concrete pad with a concrete curb six inches high, surrounding the southern and eastern boundaries. The soil surrounding this area has been capped with concrete.

The Stormwater Collection System has been replaced. The tributary to Tinker's Creek used to be the location of outfall 001. Hukill Chemical received authorization June 6, 1990, from the Army Corps of Engineers to enclose the channel, which has been done. The facility now has a storm water collection system that collects storm water run-off in tanks and a holding pool, which is treated and then discharged into the sanitary sewer system.

The Underground Cistern, which was installed around 1975, and is located east of the Hukill processing building, was a precast, concrete cistern. The cistern was used as a secondary spill containment storage tank which was interconnected to floor drains and collection trenches from the processing area. The floor drain and trenches connected to the cistern were sealed in 1982. On April 14, 1993, the Underground Cistern was cleaned and then filled with a lean mix of fine aggregate concrete. An eight inch concrete pad was also placed on top of the Cistern area.

The "Solvent Tank Farm", located approximately 100 feet to the northeast of the processing building, was an outside aboveground steel tank farm, storing reclaimed and waste solvents. The southern berm was masonry with earthen materials forming the remainder of the berm to a height of approximately four feet with a gravel base. Volatile organic compounds (VOCs) above laboratory detection levels were found in soil borings from this area. VOCs included aromatic and chlorinated compounds ranging from 0.021 mg/kg to 1006 mg/kg total VOCs. Currently, methylene chloride is the most prevalent constituent at approximately 400 to 500 mg/l in the ground water. The ground water flow direction is to the north- northeast and northwest, away from the current structures. There is no on-site contact between humans and groundwater.

Hukill Chemical Corporation is an active Treatment, Storage, Disposal Facility located in an industrial park. The facility has a Part B permit with established operations and maintenance requirements, including outlines for closure and corrective action obligations.

Footnotes:

¹ "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

² Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential Human Receptors (Under Current Conditions)

<u>Contaminated" Media</u>	<u>Residents</u>	<u>Workers</u>	<u>Day-Care</u>	<u>Construction</u>	<u>Trespassers</u>	<u>Recreation</u>	<u>Food*</u>
Groundwater	_____	<u>No</u>	_____	<u>Yes</u>	_____	_____	_____
Air (indoors)	_____	_____	_____	_____	_____	_____	_____
Soil (surface, e.g., <2 ft)	_____	<u>Yes</u>	_____	<u>Yes</u>	_____	_____	_____
Surface Water	_____	_____	_____	_____	_____	_____	_____
Sediment	_____	_____	_____	_____	_____	_____	_____
Soil (subsurface e.g., >2 ft)	_____	_____	_____	<u>Yes</u>	_____	_____	_____
Air (outdoors)	_____	_____	_____	_____	_____	_____	_____

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated") as identified in #2 above.
2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("_____"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

_____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

☒ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s): Hukill Chemical is located in an industrial parkway surrounded by an auto salvage yard, a cement processor, a hazardous waste solidification facility, a vacant parcel previously utilized in manufacturing brake shoes, and other industrial facilities. Hukill Chemical and the surrounding facilities all utilize public water and sewer. The ground water is not used for drinking water or for any other purpose at the facility. There are no residents, or daycare centers located adjacent to the facility. No trespassers or recreational users are expected, since the facility is surrounded by a well maintained fence and inspection of the facility has not provided evidence of trespassers or recreational users under current conditions. No food items are produced or grown at this facility. From the Quarterly Ground Water Monitoring Events conducted in 2000, the highest methylene chloride concentration in the ground water was found to be 400-500 mg/l in Well C (located in the Former Solvent Tank Farm) In reviewing the *Site Investigation Report* prepared by Eder Associates, volatile organic compounds were detected in surface (<2 ft.) and subsurface soil samples. There may be some exposure to contaminated media for site and construction workers, during construction or remediation projects in the corrective action areas.

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³ Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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- 4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**⁴ (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

☒ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

☐ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

☐ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s): The site worker may be exposed to contamination in the Inactive Solvent Tank Farm. Due to the location, frequency, and duration of exposure, exposures can be reasonably expected to be insignificant. The site and construction worker may potentially be exposed to some elevated levels of chlorinated solvents during any construction excavation activities in the corrective action areas. However, acceptable "levels" of human health risk exposure can be achieved by adhering to Hukill Chemical Corporation's *HEALTH AND SAFETY PLAN FOR INVESTIGATION AND REMEDIATION RELATED ACTIVITIES* and the *HEALTH AND SAFETY PLAN FOR HUKILL CHEMICAL CORPORATION*, which relates to the storage and handling of facility specific wastes, found in Appendix L of the *Revised RCRA Closure Plan and RCRA Corrective Measures Implementation Plan*.

⁴ If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

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_____ If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be “unacceptable”)- continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.

_____ If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code

Reference(s):

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

☒ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Hukill Chemical Corporation facility, EPA ID # OHD 001926740, located at 7013 Krick Road, Bedford, Ohio under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

☐ NO - "Current Human Exposures" are NOT "Under Control."

☐ IN - More information is needed to make a determination.

Completed by:
Date: 03/16/01



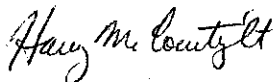
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FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

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DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

**RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)**

Migration of Contaminated Groundwater Under Control

Facility Name: Hukill Chemical Corporation
Facility Address: 7013 Krick Road, Bedford, Ohio 44146
Facility EPA ID #: OHD 001926740

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

☒ If yes - check here and continue with #2 below.

☐ If no - re-evaluate existing data, or

☐ if data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Is **groundwater** known or reasonably suspected to be "**contaminated**"¹ above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

☒ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

☐ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

☐ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): The ground water is contaminated with volatile organic compounds (VOCs), and quarterly ground water monitoring events show concentrations exceeding the federal drinking water maximum contaminant levels (MCLs) for cis-1,2-dichloroethene (cis-1,2-DCE), vinyl chloride (VC), 1,1,1-trichloroethane (1,1,1-TCA), trichloroethene (TCE), and methylene chloride (MC). Well C, located in the "Inactive Solvent Tank Farm", showed the highest level of contamination with methylene chloride at 480 mg/l for the year 2000. The MCLs for the VOCs are: TCE-0.005 mg/l, cis-1,2-DCE- 0.07 mg/l, VC-0.002 mg/l, 1,1,1-TCA- 0.20 mg/l, and MC- 0.005 mg/l. Supporting documentation can be found in the *Revised RCRA Closure Plan and RCRA Corrective Measures Implementation Plan* and the *FOURTH QUARTER, 2000 GROUNDWATER MONITORING REPORT, JANUARY 31, 2001* submitted to Ohio EPA by Hukill Chemical.

Footnotes:

¹"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

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3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"² as defined by the monitoring locations designated at the time of this determination)?

- ☒ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"².
- ☐ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"²) - skip to #8 and enter "NO" status code, after providing an explanation.
- ☐ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): Methylene chloride is the main chemical of concern (COC), which has the highest concentration found in Well C, located in the "Inactive Solvent Tank Farm". Since the installation of this well in 1986, the methylene chloride concentration has decreased from a high of 7400 mg/l, to it's most recent and lowest concentration of 17.7 mg/l reported from the December 18, 2000 sampling event. Quarterly ground water monitoring was instituted to demonstrate natural attenuation. The parameter list was expanded in 1999, to include all the necessary analyses for monitored natural attenuation. The biogeochemical conditions are conducive to biodegradation. The concentration of potential electron donors and terminal electron acceptors (TEAPs,energy) are important indicators used in evaluating biodegradation potential. The natural attenuation assessment demonstrated that anaerobic conditions exist within the aquifer, along with sufficient nutrients, TEAPs and the presence of end (degradation) products supporting biodegradation. With the concentration of methylene chloride decreasing, low level to non-detect concentrations in the surrounding monitoring wells, and the evidence supporting natural attenuation, it appears that the groundwater contamination is stabilized. A detailed discussion of the natural attenuation assessment can be found in the *Revised RCRA Closure Plan and RCRA Corrective Measures Implementation Plan* submitted to Ohio EPA by Hukill Chemical on May 24, 2000.

² "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

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4. Does "contaminated" groundwater discharge into surface water bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

☒ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): There are no ground water discharges to surface water at this facility. The tributary to Tinker's Creek used to be the location of outfall 001. Hukill Chemical received authorization June 6, 1990, from the Army Corps of Engineers to enclose the channel, which has been done. There is no evidence of off-site migration of contaminated ground water. The boundary monitoring wells were non-detect for all chemicals of concern. Supporting documentation can be found in the ***FOURTH QUARTER, 2000 GROUNDWATER MONITORING REPORT, JANUARY 31, 2001*** and the ***Revised RCRA Closure Plan and RCRA Corrective Measures Implementation Plan*** submitted to Ohio EPA by Hukill Chemical on May 24, 2000.

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5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant**" (i.e., the maximum concentration³ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration³ of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration³ of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations³ greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rational and Reference(s): _____

³ As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

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6. Can the discharge of “contaminated” groundwater into surface water be shown to be “**currently acceptable**” (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented⁴)?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site’s surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,⁵ appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment “levels,” as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of “contaminated” groundwater can not be shown to be “**currently acceptable**”) - skip to #8 and enter “NO” status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter “IN” status code.

Rationale and Reference(s): _____

⁴ Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

⁵ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

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Environmental Indicator (EI) RCRIS code (CA750)
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7. Will groundwater **monitoring** / measurement (and surface water / sediment / ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

☒ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

☐ If no - enter "NO" status code in #8.

☐ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): As part of Hukill Chemical's RCRA Part B Permit, closure and corrective action obligations must be addressed, which includes post-closure ground water monitoring. All monitoring wells (except well SW-1 which has been sealed) will be sampled on a quarterly basis for a period of one year following closure plan approval. After completing one year of additional quarterly sampling, the frequency for sampling all wells for all required parameters will be reduced to a semiannual basis, except for select monitoring wells which will continue to be sampled on a quarterly basis for a period of four years following the initial year of monitoring. The select wells include: well I; well C; well SW-2 and well SW-3. These wells were selected based on their location and importance relative to the contingency plan triggers. Well I is the most upgradient well and will be sampled to confirm COCs are not migrating onto the site from upgradient properties. Well C has historically contained the highest concentration of COCs and is anticipated that the COCs will persist in this well for the longest period of time. Wells SW-2 and SW-3 are located downgradient of the primary source area and represent the concentration of COCs that could be migrating off site. After completing the four years of quarterly sampling in the select wells, continued ground water sampling will be limited to semiannual sampling in all monitoring wells throughout the period required for post-closure monitoring. Detailed discussion of planned activities can be found in the *Revised RCRA Closure Plan and RCRA Corrective Measures Implementation Plan* submitted to Ohio EPA by Hukill Chemical on May 24, 2000.

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8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

☒ **YE** - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Hukill Chemical Corporation facility, EPA ID # OHD 001926740, located 7013 Krick Road, Bedford, Ohio. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

☐ **NO** - Unacceptable migration of contaminated groundwater is observed or expected.

☐ **IN** - More information is needed to make a determination.

Completed by:
Date: 03/12/01



Gunars Zikmanis
Environmental Specialist 2
Ohio EPA, NEDO, DHWM

Reviewed by:
Date: 03/12/01



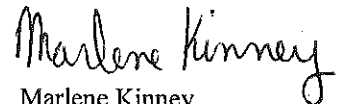
John Palmer
Environmental Specialist 3
Ohio EPA, NEDO, DHWM

Supervisor:
Date: 03/12/01



Harry Courtright
Environmental Supervisor
Ohio EPA, NEDO, DHWM

Reviewed by:
Date: 03/12/01



Marlene Kinney
Environmental Specialist 3
Ohio EPA, NEDO, DHWM

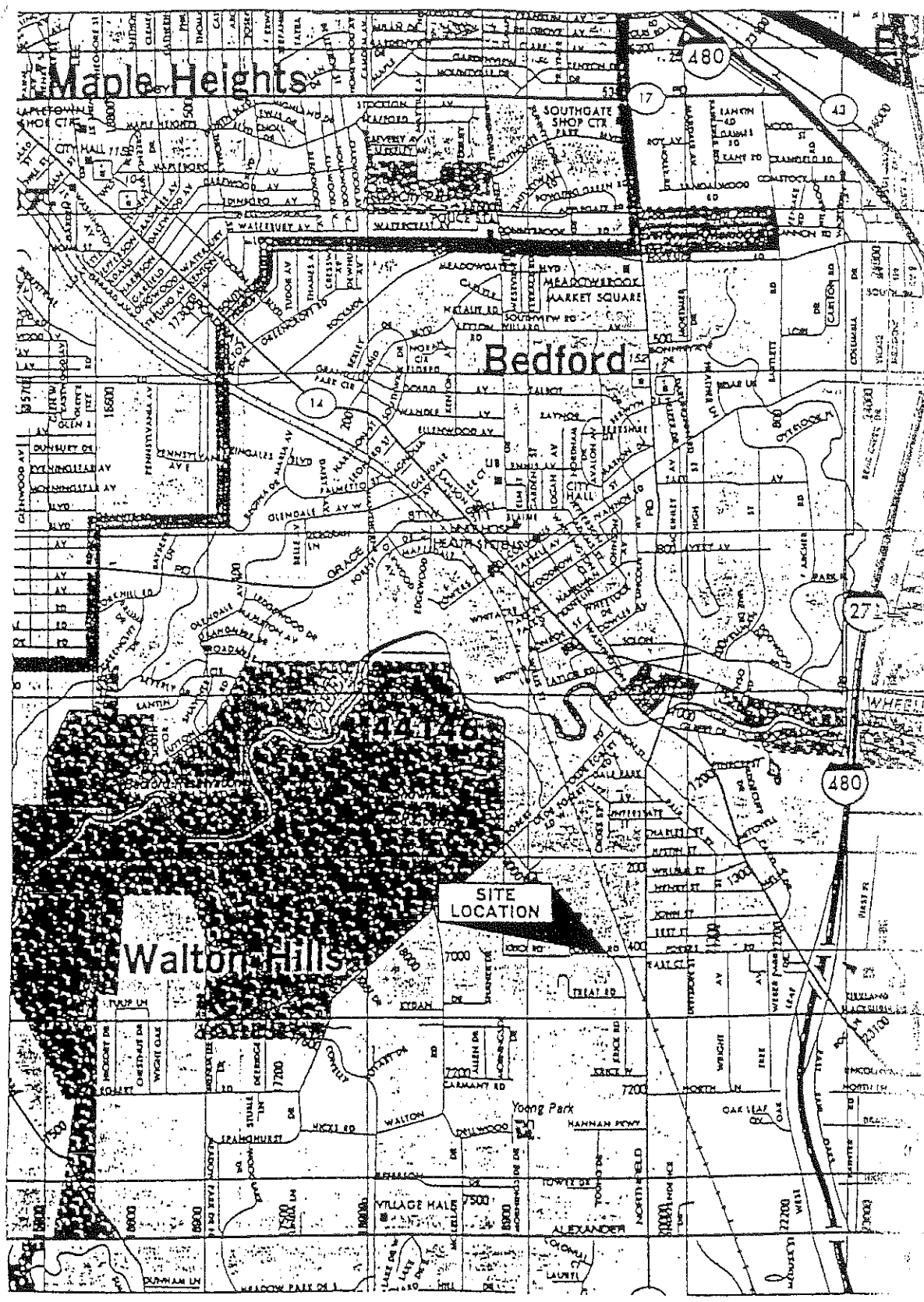
Locations where References may be found:

Ohio EPA, Northeast District Office
2110 East Aurora Road
Twinsburg, Ohio 44087
(Phone) (330) 963-1200

Contact telephone and e-mail numbers

Gunars Zikmanis, Ohio EPA
John Palmer, Ohio EPA
Harry Courtright, Ohio EPA
Marlene Kinney, Ohio EPA
Phone Number: (330) 963-1200

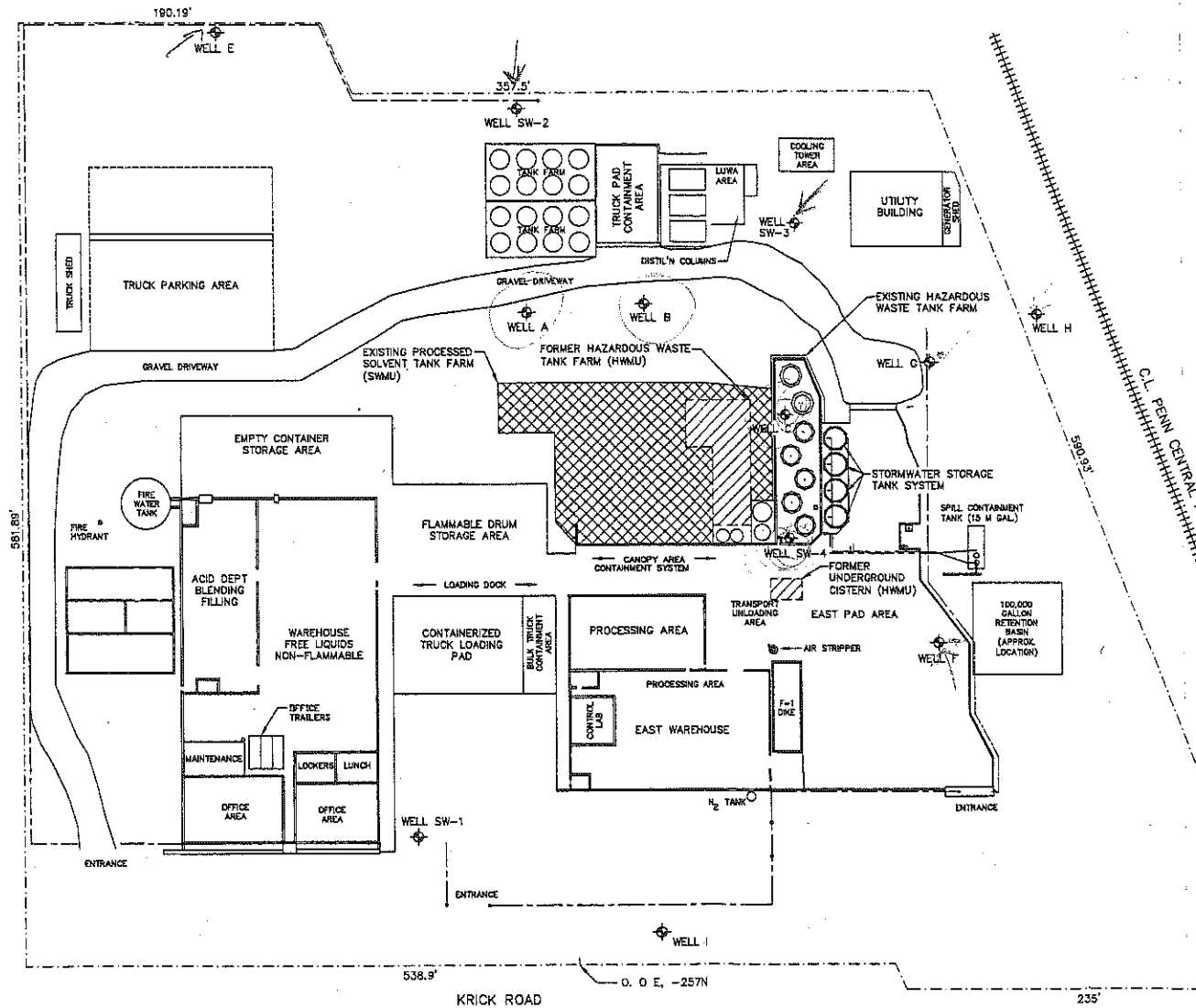
gunars.zikmanis@epa.state.oh.us
john.palmer@epa.state.oh.us
harry.courtright@epa.state.oh.us
marlene.kinney@epa.state.oh.us



<p>Title: THE LOCATION MAP PREPARED FOR: LEADER CORPORATION PROJECT: NEW ROAD BEYOND 3000</p>	<p>LEADER CORPORATION 4350 W. 12th St. Cleveland, Ohio 44111 (216) 771-1100</p>	<p>Project: 117-110 Date: 1-1-64 Scale: 1" = 100'</p>	<p>Drawn: OTW Checked: OTW Date: 1-1-64</p>
<p>Prepared For: LEADER CORPORATION Date: 1-1-64</p>			

MAY 9, 2000

3621X019.DWG



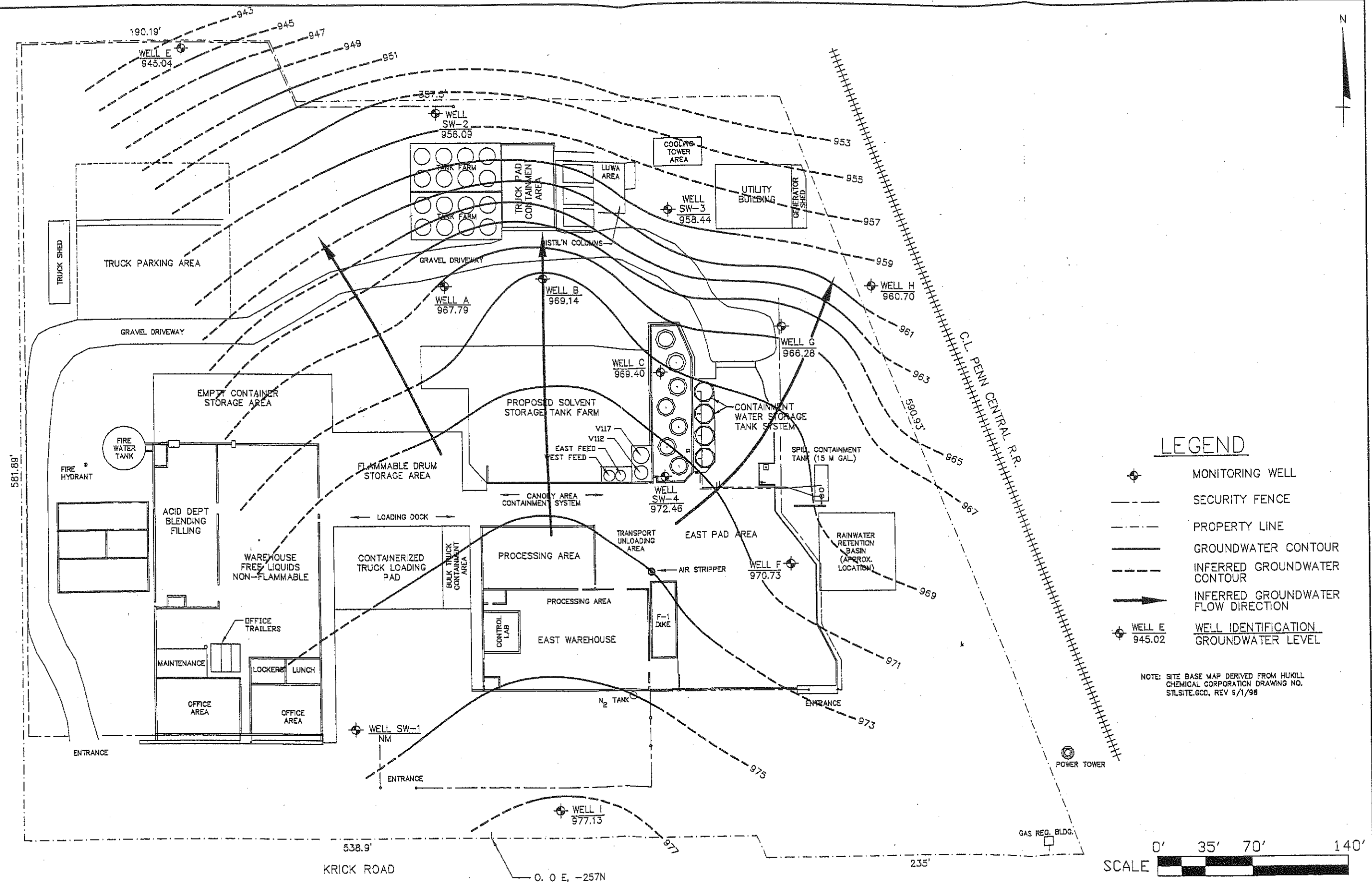


FIGURE 1
GROUNDWATER CONTOUR MAP
 12/18/2000
 HUKILL CHEMICAL CORPORATION
 BEDFORD, OHIO

DECEMBER 2000

33621.03



State of Ohio Environmental Protection Agency

STREET ADDRESS:

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122 South Front St.
Columbus, OH 43215

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February 7, 2000

Sheila May
Office of Inspector General (mail code 2443)
U.S. EPA
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Ms. May:

Pursuant to our February 2, 2000 telephone conversation, please find enclosed copies of all the Environmental Indicator forms completed by Ohio EPA's Division of Hazardous Waste Management to date. Please contact me at (614) 644-2937 if you should have any questions.

Sincerely,

David A. Sholtis
Assistant Chief
Division of Hazardous Waste Management

sigaltesDS.ao

Enclosures

Bob Taft, Governor
Maureen O'Connor, Lieutenant Governor
Christopher Jones, Director



